Immediate Definitive versus Conventionally Healed Individualized Lithium Disilicate Abutment: A Clinical Report

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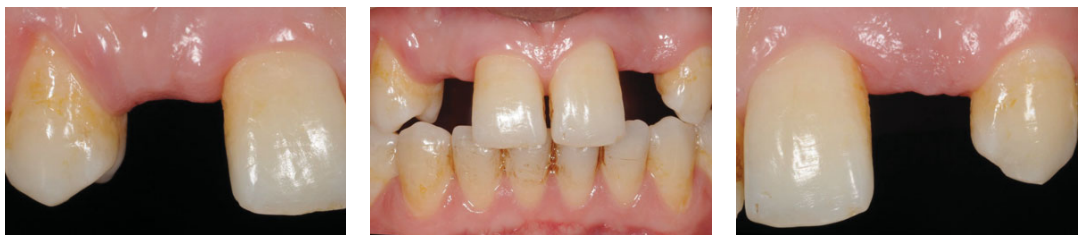
Objective

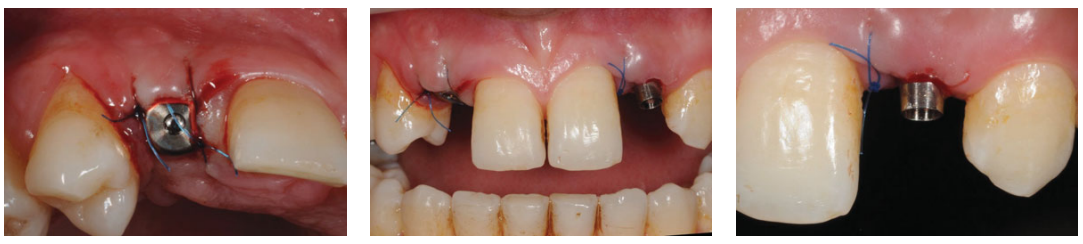
To maintain periimplantary biologic width by fabricating an individually designed non-functioning definitive lithium disilicate abutment without the need of removal for prosthetic stages and to compare the clinical outcome with its symmetrical conventional individualized abutment application.

Materials and Methods

One-stage surgery with two bone level implants (Conelog; diameter: 3.8 mm and height: 11 mm) was conducted on a patient with bilateral maxillary lateral incisor congenital absence. An immediate definitive lithium disilicate abutment (e.max CAD abutment solutions, MO, Ivoclar Vivadent) was manufactured by CAD/CAM (Cerec MCXL, Sirona) and placed at one side on a titanium base (Conelog T-base, Camlog) and temporized by a composite resin build-up. The contralateral side was left for conventional healing and after four months, an individualized abutment was prepared, likewise. At the end of four months, definitive leucite-reinforced glass-ceramic crowns for both sides were fabricated (Empress CAD, Ivoclar Vivadent) and luted (Multilink hybrid abutment cement, Ivoclar Vivadent).The patient was followed-up for gingival contour and papillae formation for 9 months without any complaints.

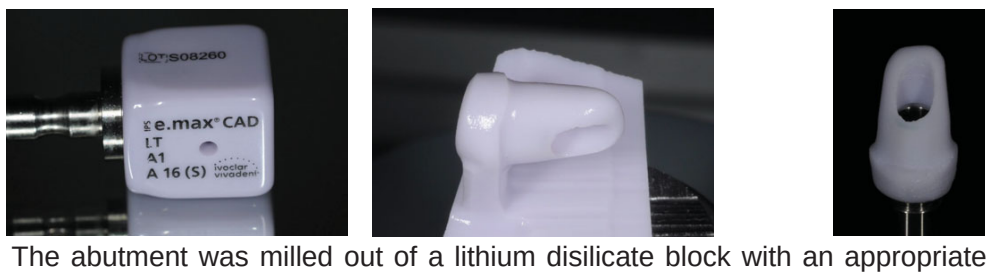


Intraoral initial phase of the patient before implant placement.



Simultaneous implant (Conelog, Camlog, Switzerland) placement was performed bilaterally and a titanium base was placed on the left implant for digital impression.

A scanbody was mounted on the left maxillary implant, optical impression was made (Bluecam, Sirona, Germany) followed by digital design of the abutment and checking the positioning in the chosen abutment block.

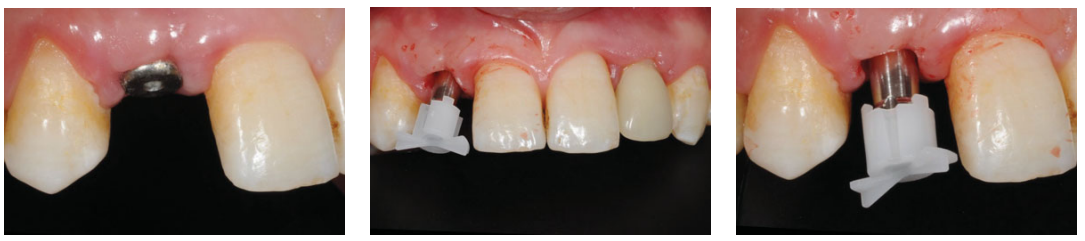


The abutment was milled out of a lithium disilicate block with an appropriate colour and fit-checking on corresponding titanium base was made before crystallization process of the glass-ceramic material.

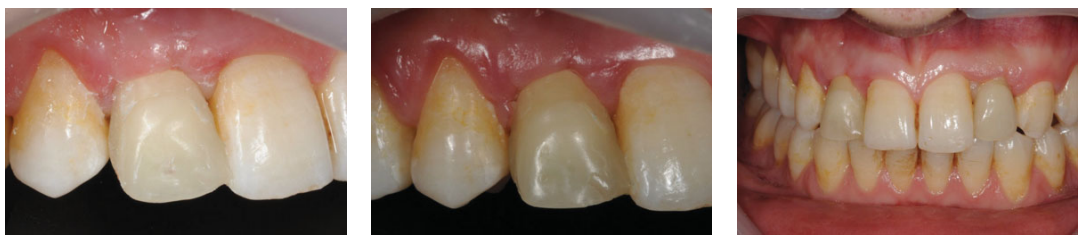
The pre-sintered abutment was mounted in a ceramic furnace and crystallization firing was performed according to the manufacturer's instructions. Then the sintered abutment was tried-in again on the corresponding titanium base.

The lithium disilicate abutment was luted adhesively with a hybrid abutment cement with the aid of a specially designed pipette placed along the center of the abutment hole to serve as a hollow for cement obturation and the excess was removed.

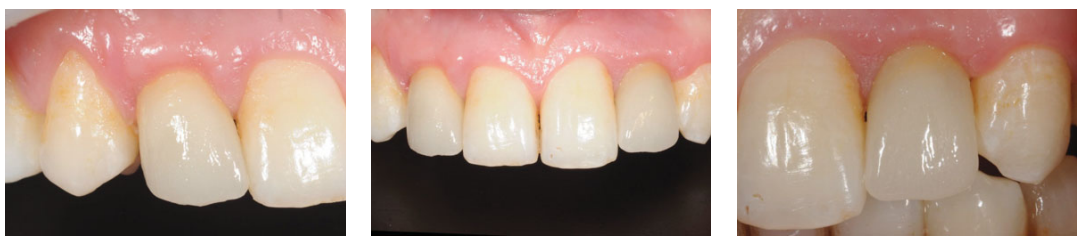
The lithium disilicate hybrid abutment was tried intraorally and hand-screwed at the time of surgery followed by chairside fabrication of an acrylic temporary esthetic facet and composite back-up.



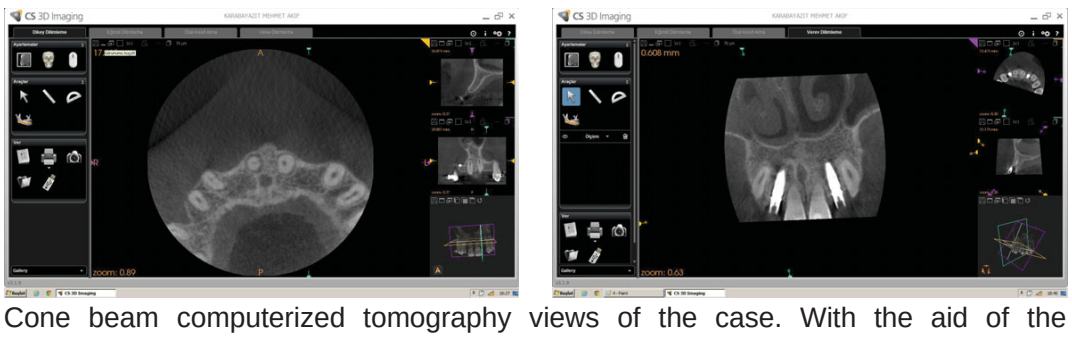
Traditional impression making was performed on the maxillary right implant.



An acrylic temporay crown was fabricated for the right implant abutment and luted.



After 6-months of healing, both temporaries were removed and definitive CAD/CAM fabricated lithium disilicate crowns were prepared and luted with an adhesive resin cement.



Cone beam computerized tomography views of the case. With the aid of the preoperative planning feature of CBCT imaging, the implants could be placed in the most appropriate position.

Results

Both maxillary implant crowns were succesful in terms of clinical and esthetic parameters after a 2-year follow-up period. However, immediate definitive abutment fabrication resulted in more successful gingival contour.

Conclusion

Individualized immediate definitive abutment fabrication and placement resulted in more favourable gingival contour and should always be preferred in surgically and clinically appropriate situations.

References

1. Ross SB, Pette GA, Parker WB, Hardigan P. Gingival margin changes in maxillary anterior sites after single immediate implant placement and provisionalization: a 5-year retrospective study of 47 patients. Int J Oral Maxillofac Implants. 2014 Jan-Feb;29(1):127-34. doi: 10.11607/jomi.3124.
2. Grandi T, Guazzi P, Samarani R, Garuti G.Immediate positioning of definitive abutments versus repeated abutment replacements in immediately loaded implants: effects on bone healing at the 1-year follow-up of a multicentre randomised controlled trial. Eur J Oral Implantol. 2012 Spring;5(1):9-16.